REMARKS/ARGUMENTS

Claims 1-3 and 6-31 are pending. Claims 1, 2, and 6-9 have been amended. New claims 18-31 have been added. No new matter has been introduced. Applicants believe the claims comply with 35 U.S.C. § 112.

Claims 1-3 and 10-13

Claims 1-3 and 10-13 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Masatoshi et al.

Applicants respectfully submit that independent claims 1 and 2 are novel and patentable over Masatoshi et al. because, for instance, Masatoshi et al. does not teach or suggest a package to which the second lens is fixed to maintain airtightness at an inside of the package; and a subassembly on which the light emitting element and the first lens are mounted, being disposed in the inside of the package to be fixed to a bottom face of the package. Nor does Masatoshi et al. disclose that the first lens and the second lens are arranged such that a relationship between the focal length f1 of the first lens and the focal length f2 of the second lens becomes $f2/f1 \geqq 5$.

First, Masatoshi et al. fails to teach to dispose the Laser Diode and the Ruby Lens on a member other than that on which the GRIN rod lens and the Single Mode Fiber are fixed. While Masatoshi et al. discloses mounting these elements independently in the section entitled "B. Experimental Setup," these elements seem to be integrated on an identical member. Moreover, in view of the confocal condition required for the arrangement of these elements, the mounting structure of these elements which may cause a misalignment between the Ruby Lens and the GRIN rod lens should be avoided to assemble the optical system taught by Masatoshi et al. Thus, Masatoshi et al. does not disclose or suggest a package to which the second lens is fixed to maintain airtightness at an inside of the package, and a subassembly on which the light emitting element and the first lens are mounted.

Second, Masatoshi et al. fails to teach the condition of $f2/f1 \geqq 5$ in arranging the first lens and the second lens of the optical system in permitting any misalignment of the Ruby Lens with respect to the GRIN rod lens. While Masatoshi et al. discloses that the

coupling loss in the optical system using the BH-type laser comes close to 0 dB when the parameter m(=f2/f1) is around 5 in the section entitled "C. Coupling Equipment," it does not teach any relationship between the coupling loss and the misalignment of the Ruby Lens with respect to the GRIN rod lens. Further in the section entitled "D. Tolerance," although Masatoshi et al. exemplifies the condition that the parameter m is 3.05 for evaluating the misalignment tolerances experimentally, it does not teach the misalignment tolerance under the condition that the parameter m is greater than or equal to 5. As described in the section entitled "I. Introduction" at page 1021, the optical system in Masatoshi et al. is intended to eliminate the stringent alignment tolerances due to the use in the conventional optical system of the extremely small lenses and to ease an adjustment of the fiber when the fiber is fixed to the optical system which has already been equipped with the Laser Diode, Ruby Lens, and the GRIN rod lens.

Third, Masatoshi et al. fails to teach that the subassembly on which the light emitting element and the first lens are mounted is disposed in the inside of the package to be fixed to a bottom face of the package. As shown in the attached figure (Figure 1 of the present application), one embodiment of the present invention shows a novel structure suitable for assembling an optical transmission module itself easily without any difficulties accompanied with a process for fixing the subassembly 21, on which the light emitting element 1 and the first lens 2 are mounted, to the bottom face of the package 5 to which the second lens is fixed. In other words, the optical transmission module as claimed is intended to skip any precise processes as required for the optical system disclosed in Masatoshi et al. for adapting to mass production thereof. Therefore, the subassembly 21 having the light emitting element 1 and the first lens 2 mounted thereon and the package 5 having the second lens 3 fixed thereto need to be prepared separately. Under these circumstances, the present inventors found a novel assembly combining the features in the optical transmission module as recited in claims 1 and 2 and described in paragraphs [0043]-[0057] and Figs. 3B, 4, and 7-9 of US 2003/0063873A1 (the present application).

In short, the structural features as recited in claims 1 and 2 are contrary to the intention of the teachings of Masatoshi et al., and are not disclosed or suggested in Masatoshi et al. For at least the foregoing reasons, independent claims 1 and 2, and claims 3 and 10-13 depending therefrom, are novel and patentable over Masatoshi et al.

Claims 6-9

Claims 6-9 depend from claims 1 and 2, respectively, stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Masatoshi et al. in view of Tabuchi et al. (US 5,757,999). The Examiner acknowledges that Masatoshi et al. does not expressly show details of the structure such as the passive alignment and the groove on the silicon board, but cites Tabuchi et al. for allegedly disclosing those features.

Applicants note, however, that Tabuchi et al. does not cure the deficiencies of Masatoshi et al., in that Tabuchi et al. also fails to teach or suggest the package to which the second lens is fixed to maintain airtightness at an inside of the package; the subassembly on which the light emitting element and the first lens are mounted; and the arrangement of the first lens and the second lens such that a relationship between the focal length f1 of the first lens and the focal length f2 of the second lens becomes $f2/f1 \geqq 5$. Therefore, claims 6-9 are patentable.

Claims 14-17

Claims 14-17 depend from claims 1 and 2, respectively, stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Masatoshi et al. in view of Goto et al. The Examiner acknowledges that Masatoshi et al. does not show the transmission capacity of an optical fiber network to which the optical module is connected, but cites Goto et al. for allegedly disclosing this feature.

Applicants note, however, that Goto et al. does not cure the deficiencies of Masatoshi et al., in that Goto et al. also fails to teach or suggest the package to which the second lens is fixed to maintain airtightness at an inside of the package; the subassembly on which the light emitting element and the first lens are mounted; and the arrangement of the first lens and the second lens such that a relationship between the focal length f1 of the first lens and the focal length f2 of the second lens becomes $f2/f1 \geqq 5$. Therefore, claims 14-17 are patentable.

Claims 18-31

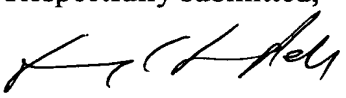
New claims 18-25 depend from claim 1, and new claims 26-31 depend from claim 2, and are submitted to be patentable as being directed to additional features of the invention as well as by being dependent from allowable claims 1 and 2. For example, claim 18 recites an optical coupling loss between the first lens and the second lens is less than 2 dB. See, e.g., US 2003/0063873A1 at paragraphs [0043], [0044], and [0051]; and Figs. 3B and 4. Claim 19 recites that a positional shift of the optical axis of the first lens from the optical axis of the second lens in the direction orthogonal to the optical axis of the first lens with respect to the bottom face of the package is within 100 μm. See *id.*, at paragraphs [0051], [0053], and [0054]; and Figs. 4 and 8. Claim 20 recites that a light emitting position of the light emitting element is shifted from the optical axis of the first lens in the direction orthogonal to the optical axis of the first lens with respect to the bottom face of the package within 20 μm. See *id.*, at paragraphs [0049], [0050], [0053], [0054], and [0056]; and Figs. 4 and 7-9. Claim 21 recites that the light emitting element is fixed to the subassembly by a bonding agent. See *id.*, at paragraph [0050]. Claim 22 recites that the bonding agent comprises a solder. See *id.*, at paragraph [0050]. Claim 23 recites that the subassembly is fixed to the bottom face of the package by a bonding agent with a position of the second lens previously fixed to the package. See *id.*, at paragraph [0040]. Claim 24 recites that the bonding agent comprises a solder. See *id.*, at paragraph [0040]. Claim 25 recites that the first lens and the second lens are arranged such that a relationship between the focal length f1 and the total length f2 becomes $f2/f1 \geqq 8$. See *id.*, at paragraph [0056].

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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